



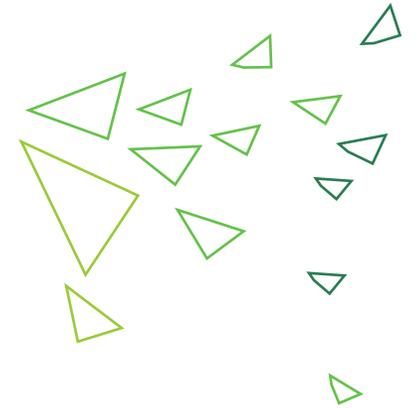
Kaweah Subbasin Water Marketing Strategy

A Local Perspective on Groundwater Markets



Outline of Topics

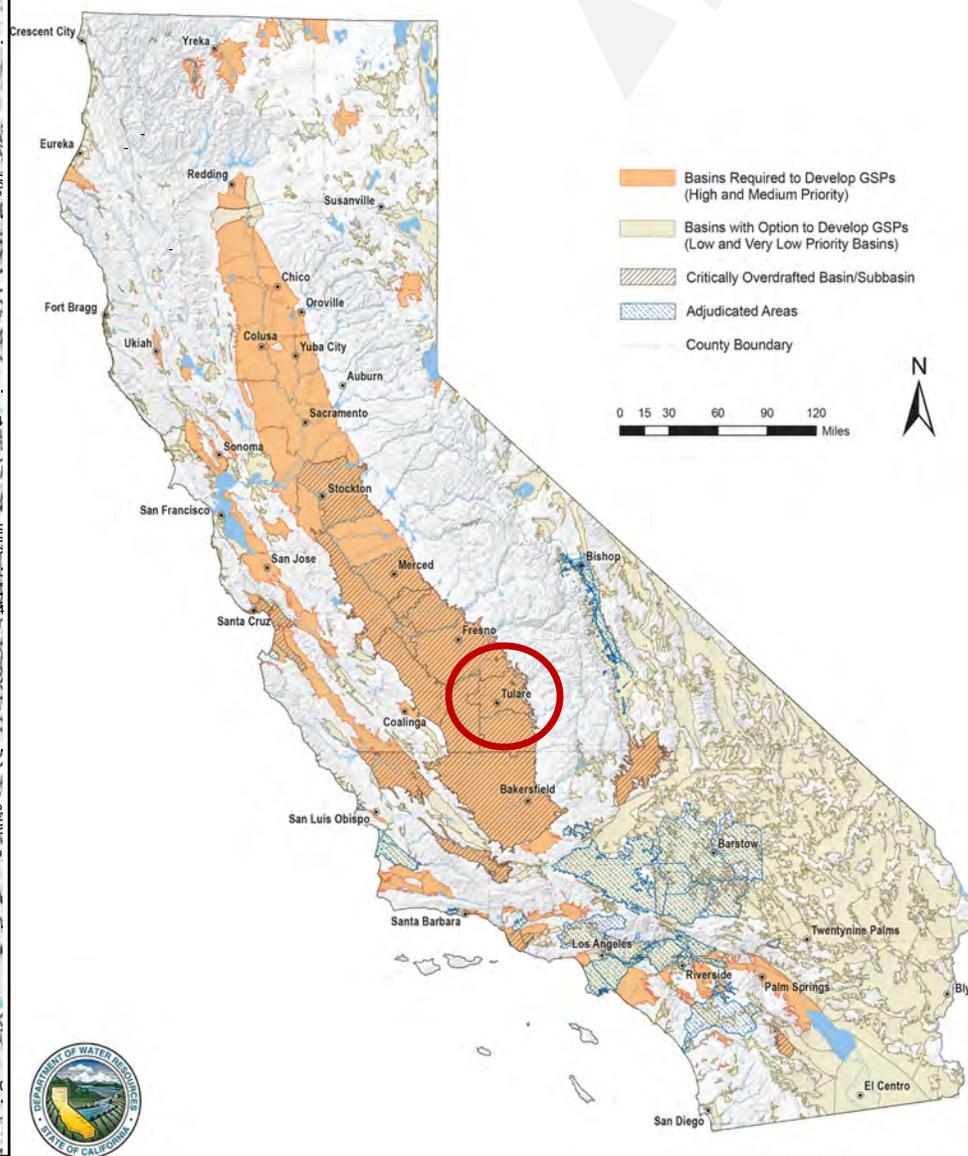
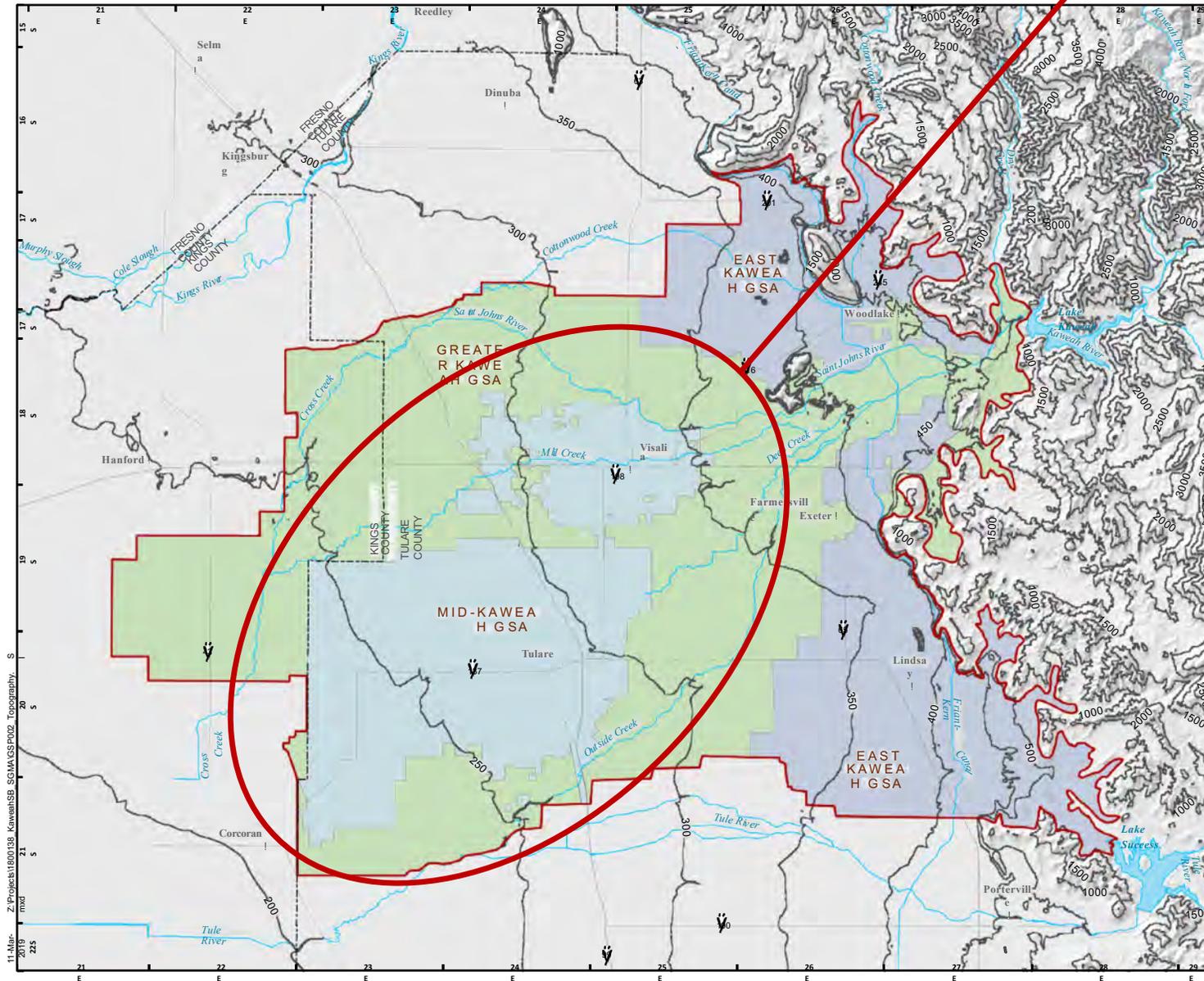
June 2021



1. Background of Kaweah Subbasin
2. How did we get to a Water Marketing Strategy
3. Status of the Water Marketing Strategy
4. Initial Water Market Thoughts

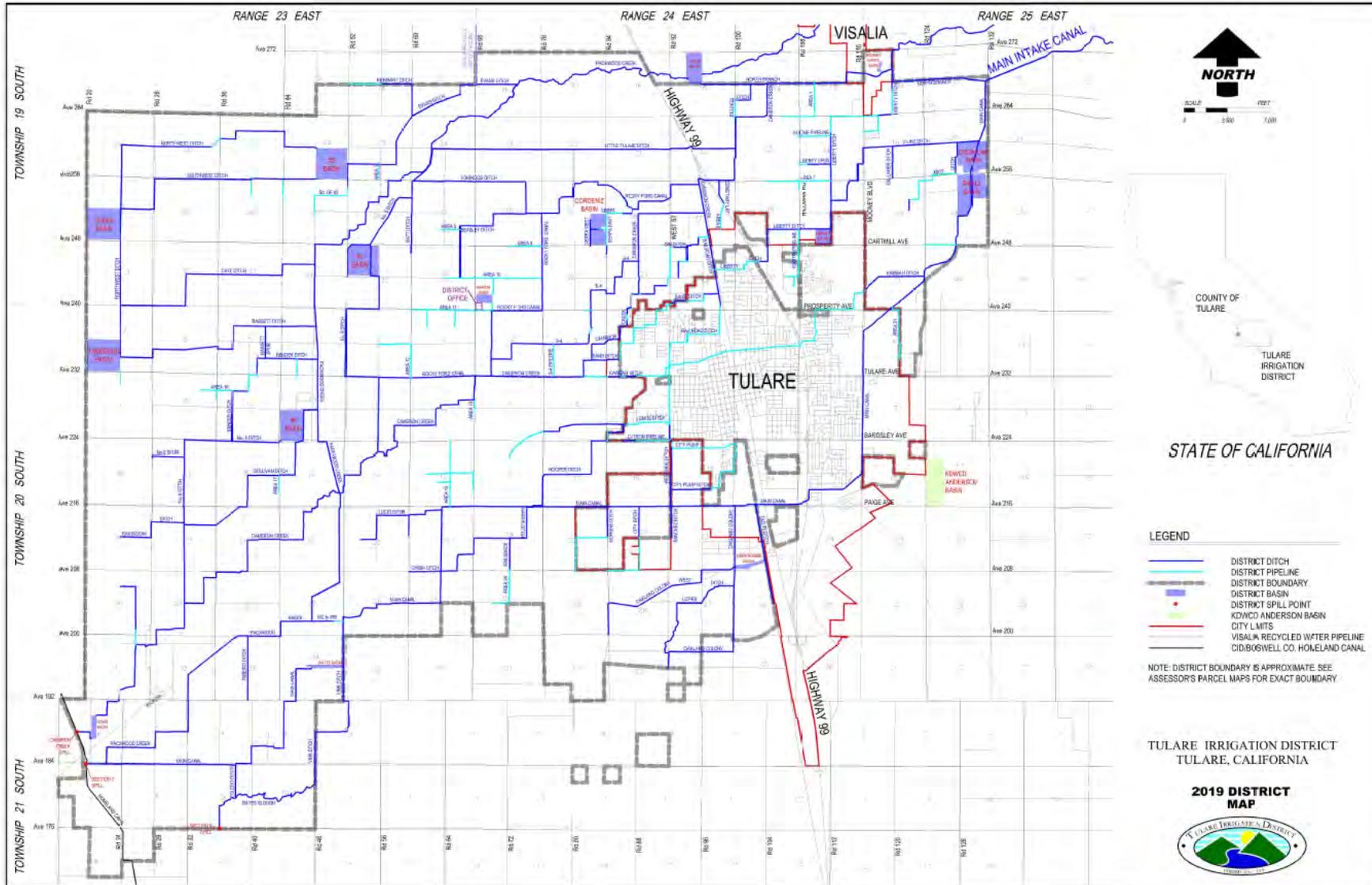
Kaweah Sub Basin

Mid-Kaweah GSA



11-Mar-2019 2:03 PM Z:\Projects\1600138_Kaweah\SB_SGM\GSP\02_Topography.mxd

Tulare Irrigation District



Stats:

- Formed in 1989
- Acreage: approx. 70,000 Acres
- 300 miles of earthen canals
- 1,300 Acres of Recharge Basins
- Average Annual Surface Water Supply of 190,000 AF
- Kaweah River Pre-1914 Water Rights
- CVP Friant Supplies
 - Class 1: 30,000 AF
 - Class 2: 141,000 AF
- Approx. 200 Growers
- Main Crops
 - Corn
 - Wheat
 - Alfalfa
 - Walnuts
 - Almonds
 - Pistachios

Kaweah Subbasin Agriculture



Urban

Industrial

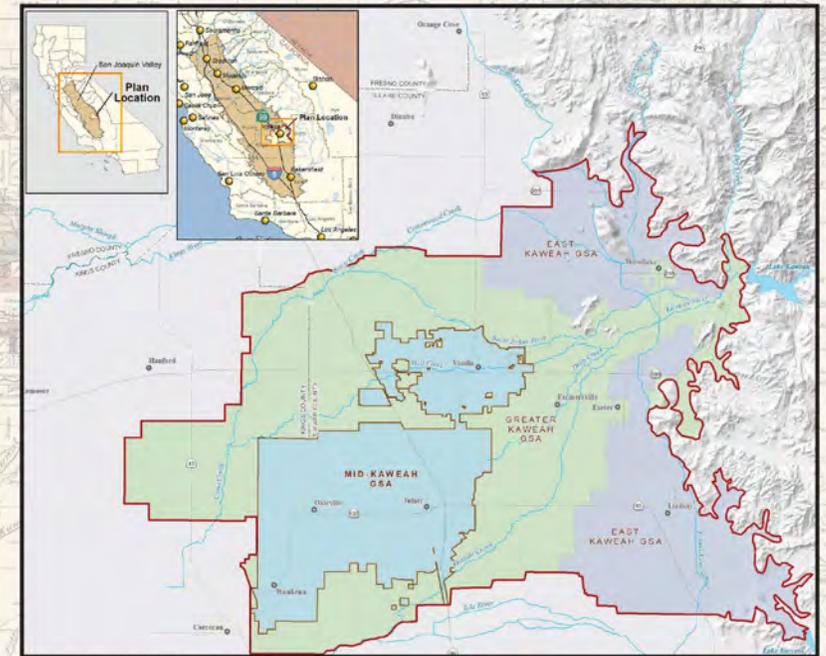
Disadvantaged Communities



Environmental

MKGSA Groundwater Sustainability Plan

Submitted January 2020

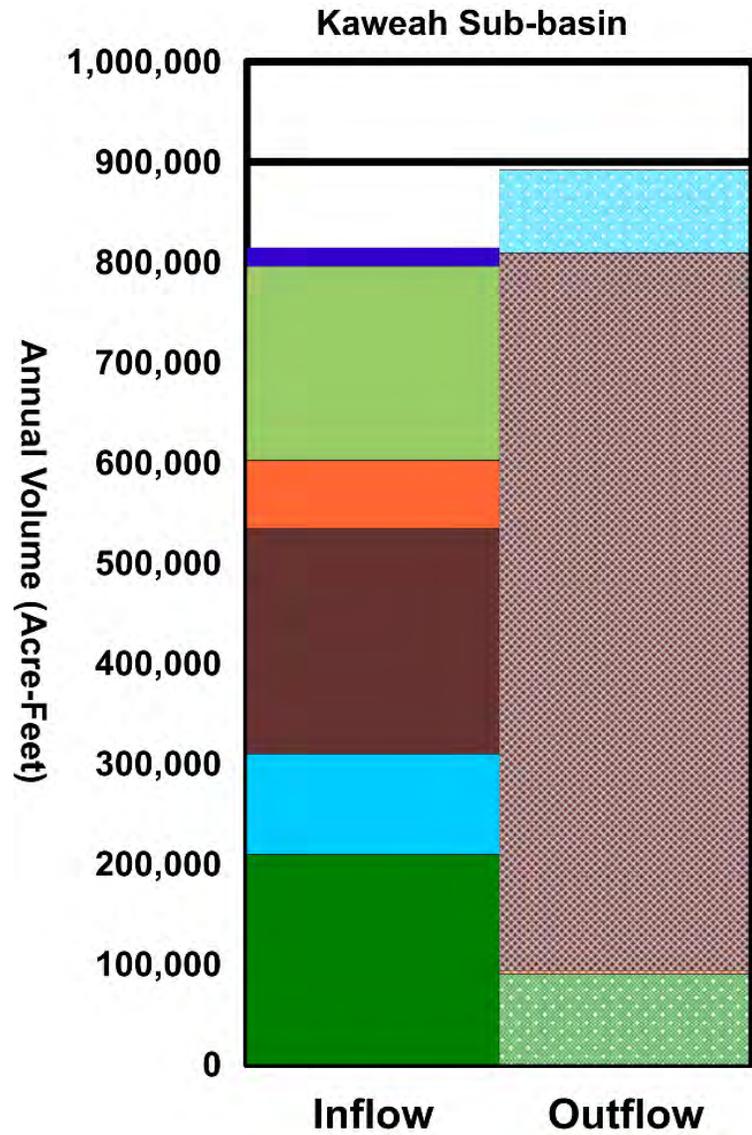


Groundwater Sustainability Plan MID-KAWEAH GROUNDWATER SUSTAINABILITY AGENCY

DECEMBER 18, 2019

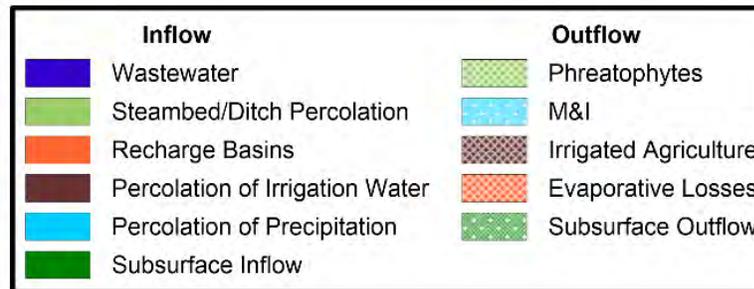
*Prepared under the Kaweah Subbasin Coordination Agreement with
Greater Kaweah GSA and East Kaweah GSA*

Kaweah Sub Basin Overdraft (Inventory Method)



*Preliminary Current Period
Overdraft = 78,000 acre-feet*

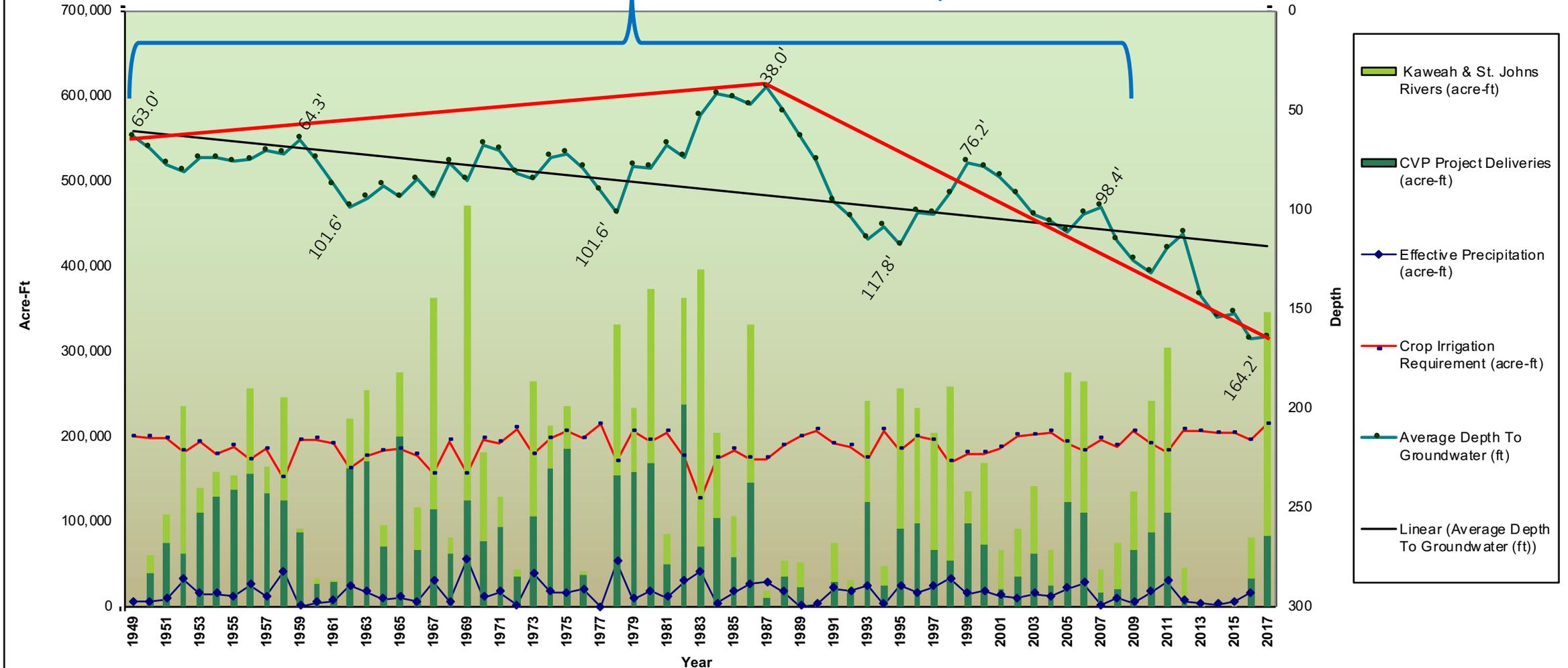
1 AF = 325,800 Gallons



Historical Depth to Groundwater In Tulare ID

Tulare Irrigation District

Period of Sustainability???



Water Accounting Framework (basis for allocations)

Segregation by Appropriator method

- ◆ Natural, man-made channel seepage from imported sources
- ◆ Sinking basin infiltration from imported sources
- ◆ Irrigation return flows from imported sources

- ◆ Precipitation
- ◆ Natural channel seepage from Kaweah sources
- ◆ Irrigation return flow from pumped local groundwater
- ◆ Mountain front inflows

Segregation by common (GSA acreage) method



- ◆ Man-Made channel seepage from Kaweah sources
- ◆ Storm water return flows
- ◆ WWTP return flows
- ◆ Sinking basin infiltration from Kaweah sources
- ◆ Irrigation return flows from appropriated Kaweah Sources

Segregation by Appropriator method

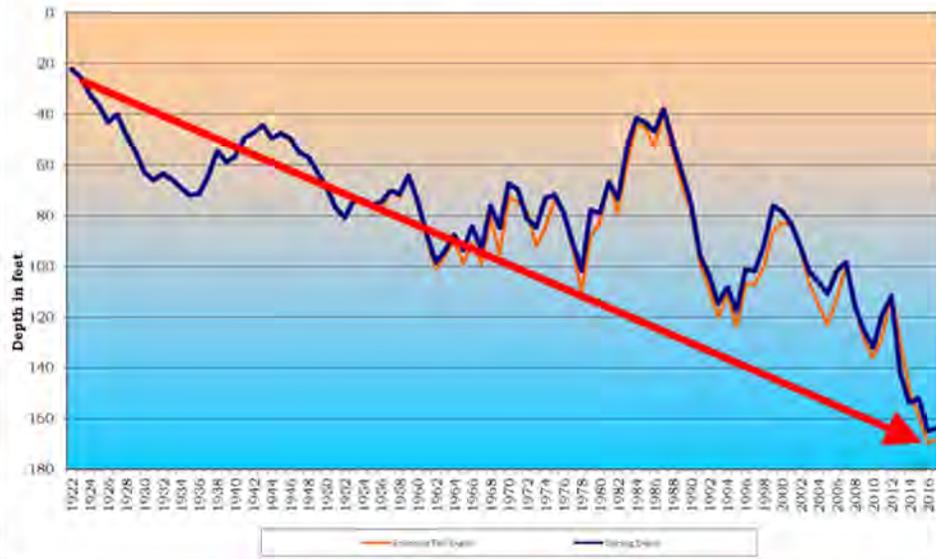
Water Accounting Framework

Table 6-3: Imputed Water Balance (1997-2017)
(values in 1,000 AF)

	MKGSAs
Groundwater Inflow Balance	230.0
GSA Total Pumping Extraction (*)	192.2
Imputed Balance	37.8

(*) Obtained from data furnished by the Subbasin consultant to the three Subbasin GSAs which was supplemental to the Basin Setting report

1922 - 2017 Depth to Groundwater
Tulare Irrigation District



Where is Groundwater Going????

(values in acre-feet)

	Native Water			
	East	Greater	Mid	Total
Percolation of Precipitation. (Ag and 'Native' non-Ag land)	23,666	44,213	20,974	88,854
Streambed Percolation from Kaweah River Sources	16,767	31,324	14,860	62,952
Irrigation Return from Pumped GW	41,484	77,501	36,766	155,752
Mountain Front Recharge	14,976	27,978	13,273	56,227
Total Native	96,894	181,017	85,874	363,784
GSA% of Total Native	27%	50%	24%	100%

	Foreign Water			
	East	Greater	Mid	Total
Streambed Percolation from Imported Sources	0	11,730	2,523	14,253
Ditch Percolation from Imported Sources	0	1,204	21,745	22,949
Basin Percolation from Imported Sources	0	1,050	14,305	15,355
Irrigation Returns from Imported Sources	12,073	1,241	7,140	20,453
Total Foreign	12,073	15,225	45,713	73,010
GSA% of Total Foreign	17%	21%	63%	100%

	Salvaged Water			
	East	Greater	Mid	Total
Ditch Percolation from Kaweah River Sources	8,835	49,771	34,880	93,486
Additional Storage	226	6,892	5,697	12,815
Stormwater Return Flows	508	2,370	8,491	11,368
WWTP Return Flows	1,470	3,129	13,878	18,477
Basin Percolation from Kaweah River Sources	0	16,005	23,479	39,484
Irrigation Returns from Kaweah River Sources	4,555	31,039	11,981	47,574
Total Salvaged	15,593	109,205	98,406	223,205
GSA% of Total	7%	49%	44%	100%

	East	Greater	Mid	Total *
Grand Total	124,560	305,447	229,992	659,999**
GSA% of Total	19%	46%	35%	100%

MKGSA GSP Projects/Management Actions

Surface Water

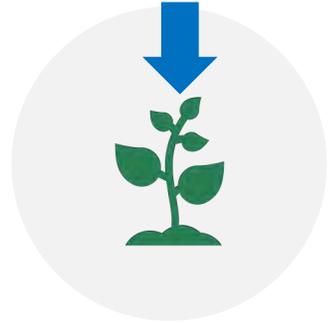


Groundwater Recharge Basins

New Basins: Martin Basin, Swall Basin, Cordeniz Basin, Okieville Basin

Total = 230 Acres

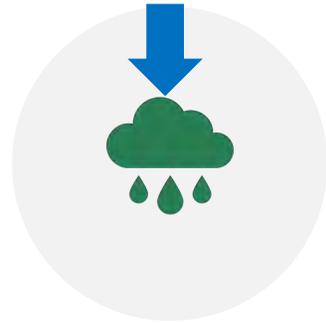
Recharge Basin Enhancements



On-Farm Recharge

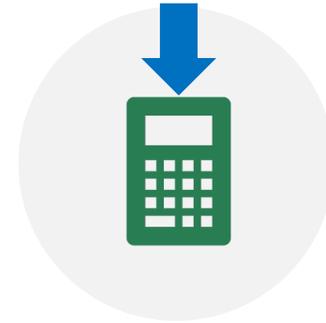
Grower participation in on-farm Recharge: 2017 had 600 Acres and achieved 6,800 AF in 3 months

GRAT Tool and Crop Buy-Out Program



Surface Water Storage Projects

Temperance Flat Reservoir & McKay Point Reservoir



Groundwater Market

Groundwater credit program to allow for the marketing of credits for ability to forgo groundwater pumping



Groundwater Markets will not solve all of our problems.



Kaweah Subbasin Marketing Strategy

RECLAMATION *Managing Water in the West*

Funding Opportunity Announcement No. BOR-DO-19-F006

WaterSMART Grants: Water Marketing Strategy Grants for Fiscal Year 2019



U.S. Department of the Interior
Bureau of Reclamation
Policy and Administration
Denver, Colorado

May 2019

— BUREAU OF —
RECLAMATION

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Reclamation / News & Multimedia / News Releases / News Release Archive / Bureau of Reclamation awards \$2 million to ten projects to develop water marketing strategies

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NEWS RELEASE ARCHIVE

Bureau of Reclamation awards \$2 million to ten projects to develop water marketing strategies

Media Contact: Peter Soeth, 303-445-3615, psoeth@usbr.gov

For Release: November 12, 2019

WASHINGTON – The Bureau of Reclamation today announced awards totaling \$2 million to ten projects to establish or expand water markets or water marketing activities. When non-federal cost-share contributions are included, these projects will accomplish more than \$4.6 million in water marketing planning activities.

The awards will go to projects from a diverse range of entities, including irrigation and water districts, states, tribes, cities and counties, and other districts with water delivery authority. The entities are located in Arizona, California, Colorado, Kansas, Texas, Oregon, and Utah.



Groundwater
Markets will
not solve all of
our problems.

Kaweah Subbasin Marketing Strategy

- Task 1: Project Outreach and Partnership Building
- Task 2: Scoping and Planning Activities
- Task 3: Development of Water Marketing Strategy
- Task 4: Implement Pilot Program
- Task 5: Grant Administration
- Total cost estimated at \$832,000 with Reclamation funding \$400,000.
- Schedule: 3-year program targeted to be finished in 2024
 - GSAs could determine if they wanted to adopt WMS in the 2025 GSP Update



Groundwater Markets will not solve all of our Problems.

Step 1: Establish Water Marketing Strategy Committee

Delayed in 2020 due to COVID-19

11-Member Committee

Representation from all beneficial users of groundwater

Water Marketing Strategy Committee

Joe Cardoza

- Greater Kaweah GSA (represents all beneficial users of GW)

Steve Nelson

- Mid-Kaweah GSA (represents all beneficial users of GW, incl. urban)

Brian Watson

- East Kaweah GSA (represents all beneficial users of GW, incl. urban)

Scott Rogers

- Water Seat (West) – Tulare Irrigation District

David Cardoza

- Ag Seat – Cardoza Co.

Manuel Leon

- DAC Seat – Self-Help Ent.

Soapy Mullholand

- Environmental Seat – Sequoia Riverland Trust

James Silva

- Water Seat – Various Kaweah Ditch Companies

Chuck Nichols

- Industrial Seat – Nichols Farms

Craig Wallace

- Water Seat (East) – Lindsay Strathmore Irrigation District

Matthew Watkins

- Ag Seat – Bee Sweet Citrus

Kaweah Subbasin Marketing Strategy Process

Education of WMS Committee

- Background into markets from around the world and U.S.
- Water Rights Workshop by MKGSA Legal Counsel
- Gauging local interest and concerns and ensuring the WMS understands and knows them

Development of Water Marketing Strategy

- Consultant lead process to address the key components of a WMS
- WMS Committee meetings monthly to step through a facilitated process
- Analysis of economic costs and benefit of WMS
- Deliverable: documentation of a WMS

Implementation of the WMS

- Each GSA will determine their interest to implement the WMS as a Management Action of their GSP
- Will need to address how to operate the WMS
 - Who: Public or Private
 - How: Software Platform

Manager's Corner – Market Thoughts



Accelerated Development

With back-to-back dry years the GSAs and WMS Committee have accelerated the timeframe to develop the WMS

Accelerated Water Allocation Process



Market is for Kaweah Subbasin

The WMS is intended to serve the needs of beneficial users in the Kaweah Subbasin.

The Market is NOT:

For investors/landowners outside of the Kaweah Subbasin

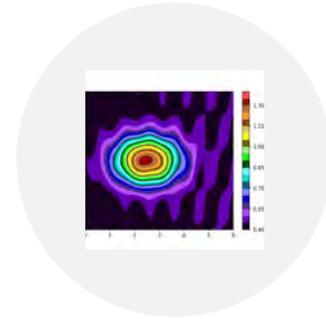
To monetize water for investment by outsiders



DACs and Environmental

The needs of our DACs and Environment should be considered in the WMS

Can they be part of the market rather than just protected from the market?



Trading is Localized

Trading is localized such that it will not impact local groundwater levels



Groundwater Markets will not solve all of our problems.

Conclusion



Groundwater
Markets will not
solve all of our
problems.



Mother Nature is going to determine our success



Aaron Fukuda – Tulare Irrigation District /
Mid-Kaweah GSA

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Thank You

